

Plaintiffs' Exhibit 27

(Redacted)

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA**

Alexandria Division

UNITED STATES, et al.,)	
)	
Plaintiffs,)	
v.)	No. 1:23-cv-00108-LMB-JFA
)	
GOOGLE LLC,)	
)	
Defendant.)	

**DECLARATION OF ROSA M. ABRANTES-METZ
IN SUPPORT OF PLAINTIFFS' OPPOSITION TO
GOOGLE'S MOTION FOR SUMMARY JUDGMENT**

Rosa Abrantes-Metz, PhD., being duly cautioned, declares as follows:

1. I am over 21 years old and am competent to testify about the matters in this Declaration based on my personal knowledge.
2. Attached hereto as Exhibit A is a true and correct copy of the December 22, 2023, Expert Report of Rosa M. Abrantes-Metz, PhD. Attached hereto as Exhibit B is a true and correct copy of the February 13, 2024, Expert Rebuttal Report of Rosa M. Abrantes-Metz, PhD.
3. I authored the attached Expert Reports identified in Item (2) above and understood at the time I signed them that they were being prepared for use in this litigation. I am prepared to testify at trial, under oath, to the matters set forth in these reports. My statements set forth in these reports are true and correct to the best of my knowledge.
4. The exhibits attached to the reports described in Item (2) are true and correct copies.

I declare under penalty of perjury that the foregoing statements in this Declaration are true and correct.

Dated: _____
Signed: Rosa M. Abrantes-Metz

Rosa M. Abrantes-Metz, PhD.

County and State: Orange County, NY

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION**

United States of America, *et al.*,

Plaintiffs,

v.

Google LLC,

Defendant.

Case No. 1:23-cv-00108-LMB-JFA

Hon. Leonie H. M. Brinkema

EXPERT REPORT OF ROSA M. ABRANTES-METZ, PH.D.

December 22, 2023

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

party data.¹¹⁸

ii. Publisher Products

1. AdSense

82. Google offers an advertiser ad network, Google Ads, discussed above, and a publisher ad network, AdSense.¹¹⁹ [REDACTED]

[REDACTED] AdSense allows publishers to place a line of code on their webpage, leading to ads being placed without the use of a publisher ad server.¹²¹

AdSense does not manage direct transactions with advertisers and does not access the demand of third-party ad networks or exchanges.¹²² AdSense “provides a way for website publishers of all sizes to earn money by displaying targeted Google ads on their websites.”¹²³ The AdSense network includes “more than 2 million publishers,”¹²⁴ and offers its publishers’ inventory for sale to Google Ads advertisers and on the AdX

¹¹⁸ [REDACTED]

¹¹⁹ [REDACTED]

¹²⁰ [REDACTED]

¹²¹ “How AdSense Works,” Google AdSense Help, available at https://support.google.com/adsense/answer/6242051?hl=en&ref_topic=1319753&sjid=9456192387848298416-NA, last accessed December 4, 2023. AdSense can be called as an inventory source within a publisher ad server, but the use of a publisher ad server is not required to access AdSense. [REDACTED]

¹²² “Compare Ad Manager, AdSense and AdMob,” Google AdSense Help, available at https://support.google.com/adsense/answer/9234653?hl=en&ref_topic=1319753&sjid=9456192387848298416-NA, last accessed December 4, 2023; [REDACTED]

¹²³ “AdSense,” Google Ads Help, available at <https://support.google.com/google-ads/answer/6519?hl=en&sjid=122803373026192189-NA>, last accessed December 4, 2023.

¹²⁴ Cetinkaya, Ezgi, “Welcome to Google AdSense,” Google AdSense, March 4, 2020, available at <https://blog.google/products/adsense/welcome-google-adsense/>, last accessed December 4, 2023.

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

advertising exchange.¹²⁵ Together Google Ads and AdSense were known as the Google Display Network (GDN).¹²⁶

2. DoubleClick for Publishers

83. Google offers a separate product, DoubleClick for Publishers (“DFP”), for publishers that need features like managing direct sales, or that want access to third-party ad networks and exchanges.¹²⁷

84. In March 2008 Google completed its acquisition of DoubleClick.¹²⁸ [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

¹²⁵ [REDACTED] and “Compare Ad Manager and AdSense,” Google Ad Manager Help, available at https://support.google.com/admanager/answer/4599464?hl=en&ref_topic=7520097, last accessed December 4, 2023. [REDACTED]

¹²⁶ [REDACTED]

¹²⁷ “Compare Ad Manager, AdSense and AdMob,” Google AdSense Help, available at https://support.google.com/adsense/answer/9234653?hl=en&ref_topic=1319753&sjid=9456192387848298416-NA, last accessed December 4, 2023.

¹²⁸ “Google Closes Acquisition of DoubleClick,” Google, March 11, 2008, available at https://googlepress.blogspot.com/2008/03/google-closes-acquisition-of_11.html, last accessed December 4, 2023.

¹²⁹ [REDACTED]

¹³⁰ [REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

85. After the acquisition, DoubleClick for Publishers became Google's publisher ad

server.¹³¹

iii. Exchange Products

1. AdX

86. Google's acquisition of DoubleClick in 2008 also included DoubleClick's ad

exchange.¹³⁶ After the acquisition, DoubleClick Ad Exchange, also known as AdX,¹³⁷

¹³¹ Mohan, Neal, "The Next Generation of Ad Serving for Online Publishers," Google, February 22, 2010, available at <https://googleblog.blogspot.com/2010/02/next-generation-of-ad-serving-for.html>, last accessed December 4, 2023.

¹³²

¹³³

¹³⁴

¹³⁵

¹³⁶ Google Closes Acquisition of DoubleClick," Google, March 11, 2008, available at https://googlepress.blogspot.com/2008/03/google-closes-acquisition-of_11.html, last accessed December 5, 2023; and Story, Louise, and Miguel Helft, "Google Buys DoubleClick for \$3.1 Billion," The New York Times, April 14, 2007, available at <https://www.nytimes.com/2007/04/14/technology/14DoubleClick.html>, last accessed December 4, 2023.

¹³⁷ In July 2018, Google unified DFP and AdX under the name Google Ad Manager. (Ramaswamy, Sridhar, "Introducing Simpler Brands and Solutions for Advertisers and Publishers," Google, June 27, 2018, available at <https://blog.google/technology/ads/new-advertising-brands/>, last accessed December 4, 2023.)

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

A. Google Leveraged Its Dominance to Build an Open Web Display Ads Empire

i. Google Acquired the Tools to Transact Open Web Display Advertising

247. Since its founding in 1998, Google has become a dominant force in information technology markets, catapulted by its search engine business that monetized search results by selling advertisements on the webpages that displayed them. Google has since worked to extend that success and dominance to open web display advertising, and in so doing has excluded rivals throughout the ad tech stack, obstructing their efforts to compete for customers.

248. Google's dominance in internet advertising is a result, in part, of AdWords (later renamed Google Ads), which it launched in 2000. AdWords allowed advertisers to place ads on Google's search results pages according to advertiser bids across collections of search terms.³⁶¹

249. [REDACTED]

[REDACTED]

[REDACTED]

³⁶¹ "Google turns 20: how an internet search engine reshaped the world," The Verge, September 27, 2018, available at <https://www.theverge.com/2018/9/5/17823490/google-20th-birthday-anniversary-history-milestones>, last accessed December 7, 2023.

³⁶² [REDACTED]

³⁶³ [REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

250. The predicate for Google's challenged conduct was its acquisition of DoubleClick in 2008, which I describe in Sections II.G.i.2 and II.G.ii.2. This acquisition equipped Google with a publisher ad server and an ad exchange. Combined with Google's valuable advertiser ad network, these assets enabled Google to begin cementing its market dominance across the ad tech stack.³⁶⁴ As described subsequently in this section, Google leveraged its DoubleClick acquisition to extend its market power to the Ad Exchange market and defend its market power in the Publisher Ad Server and Advertiser Ad Network markets.

251. [REDACTED]

252. [REDACTED]

³⁶⁴ "Google turns 20: how an internet search engine reshaped the world," The Verge, September 27, 2018, available at <https://www.theverge.com/2018/9/5/17823490/google-20th-birthday-anniversary-history-milestones>, last accessed December 7, 2023.

³⁶⁵ [REDACTED]

³⁶⁶ [REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

3. Through Project Poirot, Google Directed Transactions to AdX by Lowering Bids to Third-party Exchanges

280. From the launch of real-time bidding and ad exchanges, remnant advertising impressions were predominantly transacted via second-price auctions. Over time, some exchanges began to operate first-price auctions—or hybrids between first- and second-price auctions.⁴¹³

281. As I explain in Section VI.C, different auction types present different bidding incentives to buyers. It is not optimal for advertisers to bid their willingness to pay in first-price auctions, or those that resemble first-price auctions, because advertisers will not extract any surplus from the auction. Consequently, it can be efficient for buyers to “shade” their bids below their willingness to pay when bidding into first-price auctions. Project Poirot is a DV360 program that shades bids into some ad exchanges.

282. [REDACTED]
[REDACTED]
[REDACTED] DV360 launched a program called “Poirot” to shade its advertisers’ bids depending on certain conditions. Bids were shaded differentially across exchanges ostensibly to optimize advertiser surplus. [REDACTED]
[REDACTED]

413 [REDACTED]

414 [REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

[REDACTED]

283. [REDACTED]

[REDACTED]

[REDACTED] AdX was later subject to Poirot, though Google's standard requiring at least [REDACTED] improvement to advertiser surplus resulted in DV360 bids being passed onto AdX without any bid shading. Hence, Poirot lowered the bids DV360 submitted to

415 Ravi Report Appendix F.

416 [REDACTED]

417 [REDACTED]

418 Ravi Report, Appendix F.

[REDACTED]

419 Ravi Appendix F.

[REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

AdX's rivals, but not to AdX.⁴²⁰

284.

[REDACTED]

285. AdX engaged in Reserve Price Optimization (“RPO”) to help publishers extract surplus from advertisers via optimized reserve prices. Google recognized that RPO created conditions under which some versions of Poirot would be triggered on AdX. [REDACTED]

[REDACTED]

420

[REDACTED]

421 Ravi Report, at Section III.D.4.

[REDACTED]

422

[REDACTED]

423

[REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

[REDACTED]

286. In addition, Google acknowledged that RPO moved AdX away from a true second-price auction. [REDACTED]

[REDACTED]

287. Poirot benefited AdX by likely lowering the floor price publishers set for AdX. By

424 [REDACTED]
425 [REDACTED]
426 [REDACTED]
427 [REDACTED]
428 [REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

lowering bids to rival exchanges, Poirot likely softened header bidding competition and lowered the header bidding floor price DFP passed to AdX.⁴²⁹ At the same time, lower DV360 bids to rival exchanges lowered their historical average bids, provided DV360's unshaded bids cleared auctions prior to Poirot. This, in turn, lowered floor prices passed to AdX from the Dynamic Allocation waterfall. In both cases, AdX could more easily win the auction when presented with a reduced floor price.

288. Poirot also advantaged AdX by preserving DV360 advertiser budget for expenditures on AdX. DV360 advertiser expenditures on rival exchanges declined for two reasons: (i) advertisers are less likely to win impressions on rival exchanges when their bids are shaded; and (ii) when DV360 advertisers win on rival exchanges, they do so at lower prices.

289. [REDACTED]

⁴²⁹ Ravi Report, Section III.D.3.

⁴³⁰ [REDACTED]

⁴³¹ [REDACTED]

⁴³² [REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

[REDACTED]

290. [REDACTED]

291. [REDACTED]

433 [REDACTED]

434 [REDACTED]

435 [REDACTED]

436 [REDACTED]

437 [REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

source in the publisher's waterfall which, in this example, would be Exchange A. It is important to understand that this is no longer an average or random impression being presented to Exchange A, but instead is an impression of below-average value by virtue of having been passed over by AdX. While Exchange A might be able to transact the impression, it can be expected to do so at a price less than \$1. Over time, the average price provided by Exchange A will drop to, say, \$0.90.

329. Now, when a new impression is created, the publisher will pass this lower floor price of \$0.90 to AdX. AdX becomes more likely to win the impression with a lower floor price. Only impressions with a value less than \$0.90 will be passed to Exchange A. And so, Exchange A's bid can be expected to be below \$0.90. Hence, Exchange A's historical average price falls again. As this process continues, AdX will capture ever more transactions, and Exchange A will capture ever fewer.

3. Google's Exclusive First Look Advantage for AdX Harmed Its Publisher Customers

330. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

[REDACTED]

331. [REDACTED]

332. [REDACTED]

500 [REDACTED]

501 [REDACTED]

502 [REDACTED]

503 [REDACTED]

504 [REDACTED]

505 [REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

4. Google's Exclusive First Look Advantage for AdX Benefited AdX and Excluded Rival Ad Exchanges

333. Essential to the competitiveness of ad exchanges is access to buyers and sellers. The value of an ad exchange to buyers increases in the amount of impression inventory available on the exchange. Due to indirect network effects, more inventory begets more buyers, which, in turn, increases the value of an exchange to sellers. In short, an exchange transacts more impressions when it has access to more inventory.

334. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

335. DA directed DFP inventory to AdX and left other exchanges to compete for impressions AdX passed over. Google understood that Dynamic Allocation within DFP effectively routed impressions to AdX independently of the merits of AdX or the strength of its buyers. [REDACTED]

[REDACTED]
[REDACTED]

506 [REDACTED]
507 [REDACTED]
508 [REDACTED]
[REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

- [REDACTED]
- [REDACTED]
- [REDACTED]

336. [REDACTED]

337. [REDACTED]

- [REDACTED]

509 [REDACTED]

510 [REDACTED]

511 [REDACTED]

512 [REDACTED]

513 [REDACTED]

338.

514

⁵¹⁷ Deposition of Michael Shaughnessy (Kargo), August 9, 2023, 52:24 – 53:4. *See also* Deposition of Michael Shaughnessy (Kargo), August 9, 2023, 71:21 – 73:3.

518

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

exchanges the scale of transactions needed to compete.

C. Google Exploited its Market Power to Protect AdX from Competition

339. Not only did Google engage in the previously described conduct to establish and defend an exclusive pool of supply and demand on AdX (thereby preventing competition from other ad exchanges for these transactions at any price), but Google also engaged in other acts that diminished the price competition AdX faced for other inventory, as well. In fact, Google thwarted exchange competition by using its sell-side and buy-side enterprises to [REDACTED].⁵¹⁹

340. Google did not want AdX placed in simultaneous (or “real-time”) price competition with other ad exchanges and demand sources. Google, therefore, took advantage of its control over DFP inventory to grant AdX the opportunity to submit bids *after* the bids from other buyers were submitted, particularly those competing in header bidding. This “Last Look” represented a substantial advantage for AdX and impaired the ability of rival ad exchanges to compete for this DFP inventory. Google also exploited its market power in the Ad Exchange market to obtain a similar “Last Look” from third-party publishers wishing to access AdX demand.

341. When confronted with a yield manager, AdMeld, that enabled real-time price competition, Google responded by purchasing AdMeld and deprecating its key features.

⁵¹⁹ [REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

[REDACTED]

393. [REDACTED]

2. Google Deprecated the Ability to Set Different Floors

394. [REDACTED]

614 [REDACTED]

615 [REDACTED]

616 [REDACTED]

617 [REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

[REDACTED]

395. [REDACTED]

396. [REDACTED]

618 [REDACTED]

619 [REDACTED]

620 [REDACTED]

621 [REDACTED]

622 [REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

397. [REDACTED]
[REDACTED]
[REDACTED] Finally, in 2019, Google removed from DFP the capacity for publishers to set distinct floors. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

398. In place of flexible, buyer-specific floors, Google implemented so-called Unified Pricing Rules (UPR) that required publishers to set a common floor price for all exchanges and ad buyers.⁶²⁶ [REDACTED]
[REDACTED]

399. [REDACTED]
[REDACTED]
[REDACTED]

⁶²³ [REDACTED]
⁶²⁴ [REDACTED]
⁶²⁵ [REDACTED]
⁶²⁶ Bigler, Jason, “An update on first price auctions for Google Ad Manager,” Google Ad Manager Blog, May 10, 2019, available at <https://www.blog.google/products/admanager/update-first-price-auctions-google-ad-manager/>, last accessed December 7, 2023; *See also* Bigler, Jason, “Rolling out first price auctions to Google Ad Manager partners,” Google Ad Manager Blog, September 5, 2019, available at <https://www.blog.google/products/admanager/rolling-out-first-price-auctions-google-ad-manager-partners/>, last accessed December 7, 2023; [REDACTED]
[REDACTED]

⁶²⁷ [REDACTED]
[REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

[REDACTED]

400. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

401. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

402. [REDACTED]

[REDACTED]

628 [REDACTED]

629 [REDACTED]

630 [REDACTED]

[REDACTED]

631 [REDACTED]

advertisers, provided Google Ads wins some of the recaptured impressions.

F. Google's Exclusionary Conduct Harmed Competition in the Relevant Antitrust Markets

i. Google's Exclusionary Conduct Diverted Transactions from Google's Rivals and Impaired Their Ability to Develop Scale

431. Google's conduct discussed above contributed to harming the competitiveness of Google's rivals in the Publisher Ad Server, Ad Exchange, and Advertiser Ad Network markets by capturing impressions that would have otherwise been won by Google's rivals and by impairing the ability of rivals to compete. In this section, I explain how this exclusion further harmed competition by depriving rivals of scale; weakening the third-party ecosystem of the ad tech stack, and ultimately induced exit and discouraged entry.

432. As I explain in Section VI.E, scale is important to many ad tech products because of scale economies, indirect network effects, and informational advantages associated with scale. Google's challenged conduct diverted impressions from its rivals, limiting their scale. The need for scale to compete imposes a barrier to entry.

1. Google's Exclusionary Conduct Denied Scale to Rivals in the Ad Exchange Market

433. As discussed above, Google engaged in exclusive conduct which impaired, and continues to impair, competition in the Ad Exchange market. By excluding rival exchanges from transacting impressions, Google's conduct denies them the scale

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

necessary to effectively compete in the Ad Exchange market. Specifically:

- By restricting Google Ads’ demand exclusively to AdX, Google foreclosed rival ad exchanges from competing for that demand at any price;
- By granting AdX an exclusive First Look at DFP inventory, Google foreclosed rival ad exchanges from competing for that inventory at any price;
- By granting AdX a Last Look at DFP inventory offered through header bidding auctions as well as third-party inventory, Google secured AdX the opportunity to win transactions away from rival exchanges, impairing their ability to compete on price;
- By deprecating AdMeld’s functionalities related to real-time bidding, Google helped protect AdX’s privileged First and Last Look positions, impairing the ability of rival ad exchanges to compete on price; and
- By removing the ability of DFP publishers to set high floor prices for AdX, Google protected AdX from this source of price competition.

434. Executives of ad exchanges explained the importance of scale in the Ad Exchange market. For instance, Andrew Casale, President and CEO of Index Exchange, testified that “[t]he more scale of transactions that you’re privy to, the more accurately you can determine a predicted win rate at every price point with those predictions being highly reliable.” He said his firm did not have the scale “to employ this technology.”⁶⁸⁹ OpenX CEO John Gentry testified that AdX’s scale gives it “more access to data from a larger footprint of publishers, the larger footprint of demand makes them more – it

⁶⁸⁹ Deposition of Andrew Casale (Index Exchange) 30(b)(6), September 26, 2023, 216:24–218:3.

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

allows them to drive more spend into publishers and going back to the – the connection with the ad server is critical and the fact that it’s a tremendous amount of data that we don’t have.”⁶⁹⁰

435. Adam Soroca, Chief Product Officer of Magnite, testified about the importance of scale in the Ad Exchange market: “[t]he bigger you are...the more data flows through your system and the better you can optimize your algorithms...the larger the deal size is that you can bring onto your platform through the buy side...the more your ability is to...grow your business on top of what’s already a fixed cost basis and become more profitable.”⁶⁹¹ Mr. Soroca testified that it is difficult for Magnite to compete with Google given the differences in market share. The firm does not consider AdX a director competitor, and typically tries to compete with Pubmatic, Index Exchange, OpenX, Xandr.⁶⁹²

436. Google’s conduct “prevents competing SSPs from achieving a critical size to lower prices and innovate,” according to testimony by Arnaud Creput, CEO of Equativ, a rival PAS and ad exchange.⁶⁹³ Absent Google’s exclusion, “Equativ could have reached the scale so as to maintain and increase its investments...in order to offer its clients a viable alternative to Google to its ad server and also to the SSP.”⁶⁹⁴ However, he said, “Equativ and the other SSPs are not competing on a level playing field with Google’s

⁶⁹⁰ Deposition of John Gentry (OpenX), October 26, 2023, 72:18–73:4.

⁶⁹¹ Deposition of Adam Soroca (Magnite), August 31, 2023, 65:4–65:14.

⁶⁹² Deposition of Adam Soroca (Magnite), August 31, 2023, 21:15–22:18.

⁶⁹³ Deposition of Arnaud Creput (Equativ), September 5, 2023, 40:2–41:19.

⁶⁹⁴ Deposition of Arnaud Creput (Equativ), September 5, 2023, at 43:1–46:1.

E. Google's Exclusionary Conduct Impairs Match Quality in Open Web Display Advertising

739

740 Mankiw, N. Gregory, *Principles of Economics*, Cengage Learning 8, (2016), at p. 161, (“Indeed, the deadweight loss of a tax rises even more rapidly than the size of the tax. This occurs because the deadweight loss is the area of a triangle, and the area of a triangle depends on the *square* of its size. If we double the size of a tax, for instance, the base and height of the triangle double, so the deadweight loss rises by a factor of 4. If we triple the size of a tax, the base and height triple, so the deadweight loss rises by a factor of 9.”) (emphasis in original).

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

five ways.

477. *First*, because Google's fees are not constrained by competition with other exchanges, an AdX advertiser (whether Google Ads, DV360 or a third-party advertiser) may have a greater willingness to pay for an impression, but, nevertheless, lose the impression to another advertiser who transacts through a lower cost channel;

478. *Second*, Google Ads' exclusive buying on AdX precludes advertisers from acquiring impressions offered only on other exchanges. Such impressions likely would have provided greater surplus to Google Ads' advertisers on at least some occasions. In fact, evidence presented in Section VIII.B demonstrates that Google was aware that its foreclosure of Google Ads' buying on other exchanges forestalled transactions its advertisers wished to undertake. This was particularly true for high-value remarketing impressions that critically depend upon matches between advertisers and the specific online audience that has visited the advertisers' websites;

479. *Third*, Google's exclusive restriction of DA's First Look and Last Look features to AdX enables AdX to preferentially access inventory irrespective of whether AdX supplied the best match, i.e., the buyer with the highest willingness to pay. Google admits, [REDACTED]⁷⁴¹ In particular, an advertiser buying via a third-party exchange with the high willingness to pay for an impression may lose

⁷⁴¹ [REDACTED]

Expert Report of Rosa M. Abrantes-Metz, Ph.D.

the impression to an advertiser using AdX because of the AdX advantage in DFP. As I described in Section VIII.B.ii.2, economic theory predicts the magnitude of the distortion caused by this preferential access grew because the preference was reinforcing. Furthermore, this is exacerbated by Google's bid manipulation schemes. Google's programs such as Bernanke and DRS are designed precisely to allow AdX advertisers with lower willingness to pay to sometimes win impressions over non-AdX advertisers with greater willingness to pay. This sacrifices advertiser surplus to Google's effort to capture transactions from its competitors;

480. *Fourth*, AdMeld provided a platform whereby buyers across exchanges could compete for impressions, increasing the likelihood—if not guaranteeing—that the bidder who most highly valued particular impressions would win them. Google eliminated this AdMeld feature following its acquisition, diminishing the likelihood that impressions would be allocated to their highest value uses; and

481. *Fifth*, UPR restricted publishers from directing their inventory to their preferred demand sources. Evidence considered in Section VIII.C.iii indicates publishers preferred to direct inventory away from AdX. UPR impeded them from doing so, lessening publisher surplus. In addition, in combination with the 5% surcharge DFP charged to non-AdX participants in Open Bidding, UPR may not always lead to the advertiser with the highest willingness to pay winning an impression.

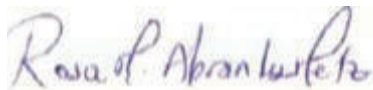
Expert Report of Rosa M. Abrantes-Metz, Ph.D.

multitude of dimensions, including price and quality. For instance, consumers may shop various stores to find the best price for a specific product from among several sellers. Economists refer to this activity as *consumer search*, and it may also encompass visits to retailer websites, as well as websites of third parties providing product information, like Consumer Reports.

501. Advertising tends to lower consumer search costs by “inform[ing] customers about brands’ characteristics, and improv[ing] the matching of consumers and products.”⁷⁵⁸ Google’s exclusionary conduct decreases the quantity and quality of open web display transactions and would thus reasonably be expected to impair this advertising from functioning in a way that lowers consumer search costs.

502. I reserve the right to update my opinions if and when more information becomes available.

Respectfully submitted,



Rosa M. Abrantes-Metz, PhD

December 22, 2023

⁷⁵⁸ Grossman, Gene M. and Carl Shapiro, “Informative Advertising with Differentiated Products,” *The Review of Economics Studies* 51, no. 1 (1984): 63-81, at p. 77.

Expert Report of Rosa Abrantes-Metz, Ph.D.

Errata

Page	Paragraph	Original	Corrected
16	29	... appears to the right of the webpage at allrecipies.com.	... appears to the right of the webpage allrecipies.com.
33	65	Google operates an exchange called AdX.	Google operates an ad exchange called AdX.
33	65	Other exchanges include Xandr and OpenX.	Other ad exchanges include Xandr and OpenX.
37	72	... that serves more than "thousands of publishers around the globe."	... that serves "thousands of publishers around the globe."
[REDACTED]	[REDACTED]	[REDACTED] [REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED]
[REDACTED]	[REDACTED]	[REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED]
65	124	I describe the mechanics of these auctions in greater detail in Section VI.C.I describe the mechanics of these auctions in greater detail in Section VI.C.	I describe the mechanics of these auctions in greater detail in Section VI.C.
116	215	Focusing on the ad stack, ...	Focusing on the ad tech stack, ...
[REDACTED]	[REDACTED]	[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]
[REDACTED]	[REDACTED]	[REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED]
[REDACTED]	[REDACTED]	[REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED]
[REDACTED]	[REDACTED]	[REDACTED] the waterfall ...	[REDACTED] the waterfall ...
[REDACTED]	[REDACTED]	[REDACTED] [REDACTED]	[REDACTED] [REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Page	Paragraph	Original	Corrected
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
227	435	... compete with Pubmatic, Index Exchange, OpenX, Xandr.	... compete with Pubmatic, Index Exchange, OpenX, and Xandr.
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
231	444	Finally, Google engaged in exclusive conduct with impaired,	Finally, Google engaged in exclusive conduct which impaired,
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
242	469	To compare the magnitude of the variation of of AdX's take rate...	To compare the magnitude of the variation of AdX's take rate...
246	475	Instead, as explained in Section Error! Unknown switch argument., ...	Instead, as explained in Section IV.C.iii ...
254	493	... "would increase our ability to create content, produce products, development new commercial products."	... "would increase our ability to create content, produce products, development [sic] new commercial products."
254	493	Gannett's output of advertising impressions. ⁷⁵³	Gannett's output of advertising impressions. ⁷⁵³
256	499	... Alphabet CEO Sundar Pichai's testified Alphabet CEO Sundar Pichai testified ...

Rosa P. Abrantes Metz

01/12/2024